

## Product information

### Compact and smart dosing system · $\mu$ Dispense



#### Description

The micro-dosage module  $\mu$ Dispense<sup>®</sup> is a compact system for process-safe liquid handling in analytical devices. It doses and meters liquids in the microliter and milliliter range very precisely. The size is based on the format of common syringe pumps.

The micro-dosage module is characterized by a modular design with optional actuator modules, such as switchable in- and outlet, various pump sizes, filters and flow sensors for volume flow control. The core component is a micro annular gear pump, which ensures precision, accuracy, low pulsation and high durability. It reduces maintenance expenses due to its long service life.

Due to the interface compatibility, existing syringe pumps can be replaced by  $\mu$ Dispense. With the Cavo<sup>®</sup> script language protocol and an extended command set,  $\mu$ Dispense behaves similar to a programmable syringe pump.

In addition to dispensing smallest volumes of liquid, the quiet and rotary operating micro pump enables continuous and reversible volume flow. The system is rinsed with high flow rates. Herewith, you will find the right dispensing pump for small dispensing volumes and microfluidic applications.

#### Advantages

- continuous and reversible flow rate
- high flow rates during rinsing
- modular design
- low noise level
- long service life
- low pulsation

#### Applications

- Analytical instrumentation
- Biotechnology
- Laboratory automation
- Blood typing
- Ion channel screening
- Flow cytometry
- Cell sorting
- DNA isolation
- Chromatography
- IVD (In-vitro diagnostics)

| Technical data                    |   |
|-----------------------------------|---|
| Pumps                             | mzr-2521, mzr-2921, mzr-4622  |
| Flow rate range (without control) | up to 72 ml/min *   |
| Controlled flow rate range        | 10 - 1,000 µl/min (H <sub>2</sub> O) / 50 - 2,500 (Methanol) *<br>Additional media on request.  |
| Dosing volume                     | beginning from 1 µl   |
| Precision CV                      | < 1 % (Coefficient of variation CV)   |
| Differential pressure range       | up to 3 bar (43.5 psi) *  |
| Storage temperature range         | -20 ... +65 °C (+104 ... +149 °F)   |
| Liquid temperature range          | -5 ... +60 °C (+23 ... +140 °F) @ 20 ... 95 % humidity  |
| Viscosity range                   | up to 20 * mPas   |
| Liquids                           | aqueous solutions, solvents   |
| Materials of pump                 | stainless steel 316L, ceramics, tungsten carbide Ni based, epoxy resin;<br>shaft seal: graphite-reinforced PTFE, stainless steel 316L; static seals:<br>FFPM, optional: FPM, EPDM |
| Additional materials              | manifold: PEEK™;<br>valve: PEEK™, FFPM optional: PPS, FPM, EPDM;<br>volume flow sensor: borosilicate glass;<br>filter: stainless steel  |
| Seal materials                    | static seal: FFPM, optional: EPDM, FPM  |
| Electronics                       | ARM Cortex M3 microprocessor  |
| Motor                             | brushless DC-motor (BLDC); nominal voltage 24 V; torque 3.3 mNm;<br>analog hall sensors   |
| Electrical connection             | D-sub plug, 15-pole (male connector)  |
| Power supply                      | 24 V DC ±10 %, max. 1.5 A   |
| Interface                         | RS-232 and RS-485 with 9600 or 38400 Baud;<br>CAN with 100 and 125 kBaud  |
| Protocol                          | standard commands of syringe pumps OEM Communication (OC)<br>protocol and Data Terminal (DT) protocol   |
| Addressing                        | max. 15 devices with RS-485 Bus ("daisy-chaining"); max. 15 devices with<br>CAN-Bus   |
| Inputs and outputs                | 2 additional digital inputs with TTL Level; 3 additional outputs with TTL<br>level  |
| Fluid connection                  | 1/4"-28 UNF   |
| Accessories                       | additional fluidic inlets and outlets, filter, gear box, volume flow sensor   |
| Dimensions (L x W x H)            | 106.7 x 44.4 x 127.0 mm (4.2" x 1.75" x 5.0")   |
| Weight                            | approx. 800 g   |
| Remarks                           | * depending on the size of the micro annular gear pump.   |

#### Notice

Even if single parameters are within the indicated performance range of technical data, certain parameter combinations may not be achievable. Single parameters may exceed their indicated performance range under adequate circumstances. For detailed evaluation please contact HNP Mikrosysteme. Actual performance may vary. Specifications are subject to change without notice. This document is subject to change without notice.

### Accessories

- m zr-2521
- m zr-4622
- m zr-2921

### Typical liquids

- Organic and inorganic solvents
- Nutrient media
- Water solutions
- Buffer solutions

### Dispense Module in syringe pump format

- size of half-height syringe pumps format
- communication via syringe pump programming commands and expanded command set
- compatible integration in analytical devices
- modular design (fluid in- and outlet, sensors, filter, materials)
- low noise level

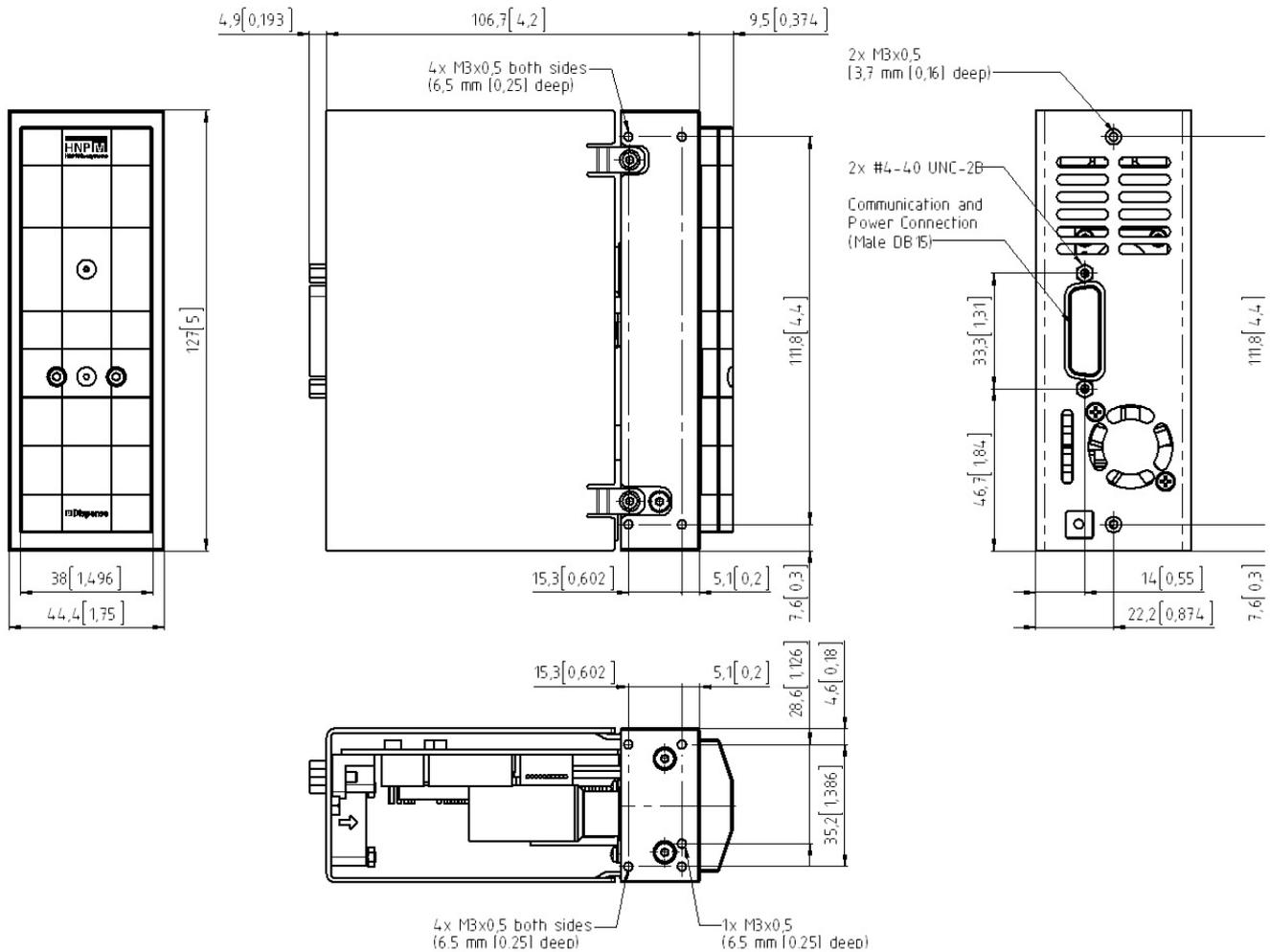
### Micro annular gear pump

- high precision of dispense volume and volume flow
- discrete dosing of smallest liquid volumes
- continuous, uninterrupted volume flow with low pulsation
- wide dynamic range of pump with low dosing volumes and high volume flow for rinsing without replacement of components
- long service life and low life cycle costs
- low cycle times

### Sensor control and monitoring (optional)

- precise controlled volume flow
- process monitoring and documentation

## Dimensions



## Patents and trademarks

Micro annular gear pumps (and housings) are protected by assigned patents: EP 1 354 135 B1; US 7,698,818 B2; DE 10 2011 001 041 B4; CN 103 348 141 B; US 10,012,220 B2; CN 103 732 921 B; US 9,404,492 B2; US 6,520,757 B1.

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## Contact

HNP Mikrosysteme GmbH  
 Bleicherufer 25  
 19053 Schwerin  
 Germany

T +49 385 52190-300  
 F +49 385 52190-333  
 sales@hnp-mikrosysteme.de

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